agitation which determined the crusade against bad drainage and unsanitary appliances in this country.

But the inquiring spirit of the scientist, which abhors blind empiricism, and seeks always to reach the root of the matter, has again been exercising itself on the question of the spread of disease by sewer-gas, and it is significant that in the most recent report to hand on sewer-air, the direct connection of the latter with the distribution of zymotic disease is declared to be still wrapped in mystery and uncertainty, and we find our precise and scientific information on this subject as meagre as it was some thirty years ago. All the more important and welcome, therefore, are some very original investigations which have just been published by Dr. Alessi, who has not contented himself with finding very few and harmless microbes in sewer-air, but has submitted the whole question of its relation to typhoid fever to a searching experimental inquiry.

For this purpose the effect of inhaling sewer-air and the gases from putrifying materials was examined on animals—rats, rabbits, and guinea-pigs being selected. After exposure to sewer-air, which was accomplished by placing them in a box with a perforated bottom communicating directly with a drain, they were inoculated with a small quantity of only a slightly virulent cultivation of the typhoid bacillus, whilst other animals were similarly treated, except that they were not compelled to inhale these noxious gases, but were kept in their ordinary surroundings. The rats, after inhaling this foul air, began to lose their vivacity, and after a time grew thin, although they eat voraciously, and out of forty-nine which were inoculated with typhoid germs thirty-seven died exhibiting the typical symptoms of typhoid infection. Of those forty-one rats, however, which, although infected with typhoid, had not inhaled sewer-air, only three succumbed. Thus the inspiration of drain-air had so far predisposed these animals to infection from typhoid that a small dose of an almost harmless growth of this organism proved very fatal to them. Guinea-pigs and rabbits exposed in like manner to gases from materials in a condition of active decomposition also acquired a predisposition to typhoid infection, for out of seventy-two guinea pigs inoculated, fifty-seven died, whilst not one of those treated with typhoid germs in ordinary surroundings succumbed. Every one of the eleven rabbits similarly treated died, but not one of the inoculated animals kept in ordinary surroundings. Dr. Alessi also found that the inhalation of these gases from putrid substances enabled a small dose of a weakened culture of the *B. coli communis*, normally present in the intestine, to produce fatal results when purposely introduced into the animals thus exposed.

It was also ascertained that it was during the first two weeks of exposure to these noxious gases that the animals were most easily predisposed to typhoidal infection, for no less than ninety per cent. of all the animals inoculated during the first fortnight died, whilst seventy-six per cent. succumbed of those inoculated in the third week. This fact may, says Dr. Alessi, partly explain how it is that some people who habitually breathe contaminated air do not appear to suffer any evil results, having gradually in course of time become accustomed to it, whilst a stranger exposed to the same conditions without previous experience may suffer very severely. The degree of predisposition, however, whilst varying in different animals, would also vary in different people.

These investigations must be regarded as a noteworthy and an important contribution to our knowledge of the distribution of disease, affording as they do so remarkable an experimental confirmation of the wisdom of a policy of sanitation dictated by instinct and intuition.

ANOTHER NEW BRANCHIATE OLIGOCHÆTE.

About two years since I described in the columns of this journal (vol. xlv. p. 109) an Annelid belonging to the family Tubificidæ, which was unique in that family in the possession of a series of branchial processes upon the posterior segments of the body. This worm, as I reminded the readers of Nature on Jan. 11 (vol. xlix. p. 247) was found in the "Victoria Regia tank" at the Botanical Society's Gardens—a locality which has produced many interesting invertebrate animals. I have now to record the existence of another Oligochætous Annelid in which branchial processes of a very similar nature to those of *Branchiura Sowerbii* are found. This worm was sent to me by Dr. Michaelsen, of Hamburg, a well-known authority upon this group of animals; it had been collected by him in South America during a recent expedition for collecting purposes to that country. With great generosity he has handed over to me for study the bulk of the Oligochæta which were brought home by him from Patagonia, the Argentine, and Chili; and the species upon which I desire to say a few words here was among those worms. It was discovered in the river at Valdivia, in Chili. The worm, like *Branchiura*, is a member of the family Tubificidæ, but it clearly represents a new genus of that family, into the general characters of which I do not propose to enter here. The collection contains several species of this new genus, for which I suggest the name of *Hesperodrilus*. The gilled species is not unlike the common *Tubifex* of our streams and lakes in outward appearance, but it differs from *Tubifex* and agrees with *Branchiura* in having a series of branchial processes attached to some of the posterior segments of the body; as I have only examined one specimen, it is impossible to say whether the limited number of these gills, in comparison with those of *Branchiura*, is a distinguishing mark; but, in any case, they differ by reason of the fact that they are lateral in position, being attached to the body just below the lateral setæ; in *Branchiura* it will be remembered that they are dorsal and ventral in position (cf. *Quart. Journ. Micr. Sci.* March, 1892, for the more complete description of *Branchiura*). It is well known that the Tubificids, as a rule, live imbedded in the mud with the tail—and not the head—end extruded, and generally waving about in the water; it is thus intelligible how the development of gills upon the posterior, rather than the anterior, end has come about. The single specimen which I have examined possessed about thirteen pairs of branchiæ; these were at first very small, but gradually increased in size towards the end of the body, those upon the terminal segments being, if anything, larger than those upon any of the preceding segments; in *Branchiura* the gills diminish in length towards the extremity; it may be that my specimen of *Hesperodrilus branchiatus* had recently lost the tail, but there were no obvious signs of this. The genus differs from *Branchiura*—and, indeed, from any other genus of Tubificidæ known, unless my *Phreodrilus* be accounted a Tubificid—in that the spermathecæ (which are unusually long) open *behind* the male pores, instead of, as in the other Tubificidæ, *in front of* them. I mention this point to show that I have not confounded this new gilled Tubificid with *Branchiura*.

Frank E. Beddard.

UNIVERSITY AND EDUCATIONAL INTELLIGENCE.

Oxford.—In a congregation held on April 26, Prof. A. H. Green and Prof. C. Lapworth were appointed Examiners in the Final School of Natural Science (Geology), and Prof. H. Marshall Ward and Prof. F. W. Oliver were appointed Examiners in the same school in Botany. All the appointments were made for one examination only.

Notice is given that the final examination for the degree of Bachelor of Medicine will begin on Monday, June 4. Names to be sent in by May 19. The examination for the degree of Master of Surgery will begin on Wednesday, June 13. Names to be sent in by May 30. The first examination for the degree of Bachelor of Medicine will begin on Friday, June 22. Names to be sent in by June 7.

The degree of D.C.L. *honoris causâ*, was conferred on Wednesday on Prof. August Weissmann.

At a meeting of the Board of Faculty of Natural Science on Tuesday last, new regulations for the preliminary examinations in Animal Morphology and Animal Physiology were approved of. The new regulations will come into force in Michaelmas Term, 1894.

At a meeting of the council of University College, Liverpool, held on Tuesday, it was announced that Lord Derby had telegraphed his intention to provide for the endowment of the chair of Anatomy. It was resolved that Lord Derby be requested to allow his name to be permanently associated with the chair. Formal intimation was also given of the endowment of a chair of Pathology by Mr. George Holt with £10,000. It was decided that the new chair should be called the George Holt Chair of Pathology, and that candidates for the chair should be invited

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to send in their names. Another announcement made was that Mr. Henry Tate would present to the Tate Library a collection of standard books of the value of £5,500. The endowment of the chairs of Anatomy and Pathology completes the provision necessary in order to bring the medical department of the College into rank with similar departments at the older Universities and at Owens College, Manchester.

THE arrangements for the University Extension Congress, to be held in London in June next, have been announced. There are several reasons which render the present year opportune for such a gathering. In the first place, the University Extension movement attains its majority, the first Courses of Lectures having been arranged by the University of Cambridge in the autumn of 1873. And secondly, University Extension work has a defined place in the scheme for the establishment of a Teaching University for London. In view of the anticipated establishment of a Teaching University on the lines laid down in the Report of the Royal Commission, it is important to sum up and present the educational results of the twenty-one years' work in University Extension, and to consider, in the light of past experience, practical proposals and a general policy for the future of the whole movement.

The Congress, which will meet in the Lecture Theatre of the University of London, will include three sessions, to be held on Friday afternoon, June 22, and Saturday morning and afternoon, June 23. The Marquis of Salisbury, the Duke of Devonshire, and Lord Herschell, will preside at the three sessions respectively.

The subjects for discussion will be:—

(1) The means of preserving and further developing the educational character of University Extension work, and the relation of the more popular to the more strictly educational side of the movement.

(2) The essentials of efficient central and local organisation, and the relation, educational and financial, of the University Extension Movement to the State and to local authorities.

(3) The educational possibilities of University Extension work and methods in relation to regular University studies and University degrees.

These subjects will be considered beforehand by a committee or committees of experts, who will present reports and formulate the resolutions to be submitted for discussion to the Congress. The Right Hon. the Lord Mayor has intimated his intention of inviting the members of the Congress to a reception at the Mansion House on the evening of Friday, June 22.

AT the last meeting of the Council of the Durham College of Science, Mr. Henry Palin Gurney, formerly Fellow of Clare College, and Deputy-Professor of Mineralogy in the University of Cambridge, was appointed Principal.

SCIENTIFIC SERIALS.

American Meteorological Journal, April.—"Storms of the Gulf of Mexico and their prediction," by W. D. Stearns. Many of the storms which enter the United States from the Gulf of Mexico are very destructive, and give scarcely any indication of their approach by means of the barometer. The author has made a special study of local conditions and cloud movements which preceded a number of storms in 1892 and 1893, and thinks that by those means their presence may be detected in every case some hours in advance of their arrival. Notes are given of the phenomena preceding several storms.—A new chart of equal annual ranges of temperature, by J. L. S. Connolly. The chart was constructed on the basis of Dr. Buchan's "Challenger" isothermal charts. It shows that the torrid zone is, on the whole, a region of moderate annual range of temperature, while the north temperate zone has extreme variations compared with the south temperate. The effects of solar and terrestrial radiation are well shown; in northern Asia there is a range of 120°, and of 80° in the northern part of North America.

Bulletins de la Société d'Anthropologie de Paris, tome iv. No. 12.—This number contains a valuable memoir by M. L. Manouvrier on the normal and abnormal variations of the nasal bones in the human species. Whatever may be the original cause of variation, it is interesting to observe that that cause is sufficient to produce in one and the same race individual varieties suggesting all kinds of ethnic types. In one case, figured by M. Manouvrier, the nasal bones are entirely suppressed, their place being supplied by the frontal bone.—M. G. de Mortillet proposes an important reform in chronology; he points out the inconvenience of using several different eras, such as the Foundation of Rome, the Birth of Christ, the Flight of Mohammed, or the Proclamation of the Republic, and suggests that 10,000 years before the Christian era should be adopted as a general starting point; this would not only include all Egyptian chronology, as known at the present day, but would also leave 5000 years at the disposal of future discoverers.—At the Broca conference, Dr. Capitan delivered a lecture on the rôle of microbes in society.—M. J. Deniker has contributed a paper on the natives of Lifou, one of the Loyalty Islands. The average stature of these islanders is somewhat below middle height (1642 mm.), although in the case of four individuals out of the ten examined by Dr. Francois, whose observations form the basis of this communication, the stature was from 1670 to 1690 mm.; the head is dolichocephalic (cephalic index = 72·4), and the nose is platyrrhine (nasal index = 97·8); five out of the ten subjects were hyperplatyrrhine (index 101 to 117). The colour of the skin, in the majority of those examined, resembled chocolate with a reddish tinge (28–29 Broca), while one of them had a light brown skin, and two others were black. The colour of the iris varied from brown to dark brown, the darker tinge predominating.—In a paper on family property in Anam, M. Paul Denjoy describes the organisation of the family, the prescriptions of the law with regard to succession and wills, and the extensive system of registration employed. He gives a good general idea of Anamite legislation, and of the principles that underlie it. The number includes several short communications of much interest.

Wiedemann's Annalen der Physik und Chemie, No. 4.—On the formation of floating metallic films by electrolysis, by F. Mylius and O. Fromm. A zinc plate is laid on the bottom of a glass jar, and is covered with a layer of 50 per cent. solution of zinc sulphate. A platinum wire 0·2 mm. thick touches the surface of the solution vertically. On passing a current from a 3-volt battery through the solution, a bright film of metallic zinc is formed round the platinum cathode, which gradually expands, and exhibits an approximately circular form, but subsequently becomes irregular. The phenomenon does not take place unless the surface of the solution is tainted with some substance insoluble in water, such as oil of turpentine. This may form a separate thick layer, and the film is produced at the separating surface. It may also be produced at the lower surface of the zinc sulphate solution by first pouring a layer of chloroform on to the zinc anode. Other metals, such as iron, cobalt, cadmium, silver, show analogous phenomena.—On the elasticity and tenacity of some new glasses as dependent upon their chemical composition, by A. Winkelmann and O. Schott. The coefficients of elasticity, and those of resistance to tension and pressure, were determined experimentally for eighteen kinds of glass. The first lies between 4699 and 7592 kg. per sq. mm. The second lies between 3·5 and 8·5 kg. per sq. mm., and the third between 60·6 and 120·8. These results may be represented by formula depending upon chemical composition, the calculated values varying by 3 per cent. from the observed ones in the case of elasticity, and about 8 per cent. in the case of tenacity.—On the coefficient of thermal resistance of different glasses as dependent upon chemical composition, by the same authors. The thermal resistivity is the property enabling glasses to withstand sudden cooling without breaking. It depends upon the elasticity, the tenacity, the thermal expansion and conductivity, the specific heat, and the specific gravity of the glass in question. In most cases the resistivity can be calculated with fair approximation if these properties are known.

Internationales Archiv für Ethnographie, vol. vii. parts 1 and 2.—The new volume of this useful journal is continued along the same lines as the previous volumes; the publisher only is changed. Heer Trap still prints the letter-press, and turns out the plates in his usual skilful manner. Prof. G. Schlegel gives the first published illustration and full description of "A Canton Flower-boat," or, as it should be called, "Gaudy Boat." These are really floating cafe-chantants, in which the greatest decorum prevails; they are hired for evening festivals and suppers, by wealthy officials and others.—Leo V. Frobenius has an interesting article, illustrated by three plates, on "Ceramics and their origin from Wood-carving in the Southern Congo Basin." He deals with the pottery trade, the form of clay vessels, wooden

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